red-hot had generated gas, combustion then took place, and the result ended in the destruction of the mill,—a severe injury to the proprietor who worked the mill (probably quite ignorant of working a steam-engine, judging from the nature of the accident); and, further, a severe loss, by the destruction of his property and loss of business.

There were three respectable individuals on the ground at the same time as myself, and one, in particular, appeared to know somewhat about steam-engines; a highly respectable gentleman came to the spot about the same time, and all appeared to be of one opinion as to the cause of the accident, and that was, as I have before stated; but one of the three, whom I will describe as Mr. A., said to the gentleman, Who is to pay for the damage done to the different buildings? Oh! said the gentleman, the miller must. Mr. A. said, He is a poor man; he was a poor man before this accident, and I am sure this will make him in a much worse condition: the bodily injury he has received, and the working of his mind, are, I think, sufficient punishment for him. Now, Sir, from this accident, and this conversation, I turn my attention to the question of protection.

It seems that the fire-insurance establishments in London will not take any insurance where a building contains a steam-engine, for less than 4s. 6d. per cent., and persons occupying premises adjoining steam-engines have to pay large premiums.

Of late my professional occupation has been such as to lead me into localities where different manufacturing businesses are carried on, and I was surprised at the number of steam-engines employed in London, varying from one-horse to twelve-horse power. Now you will ask me, by whom are these steam-engines worked? Why they are worked by any person, no matter what trade he is, so that they can get one for the least amount of wages, and not by engineers or men of science! Then why should we be surprised at accidents of this description occurring? and who are to pay for the damage done by these explosions? Most of the small engines are put up in the cheapest way possible, and the proprietor is often without capital. From the insurance office they do not obtain any cash, as the accident is by explosion and not by fire; and then to sue these men is making bad worse. Then, do not these steam-engines and steam-boilers, in general, require Government authority? We cannot build a house or other building without the inspection of a district surveyor, to see the law carefully carried out, for the safety and general welfare of the community at large;—a railroad cannot be worked until inspected and certified by a Government officer that the same is properly done, and in a fit state for the use of the public safely;—but steam-engines, and steam-boilers, that affect the lives of the people in general, and the safety of buildings, are under no control, nor even the men that work them. Why should there not be a district surveying engineer, to inspect the making and erecting of these engines, and also steam-boilers, for whatever purpose they may be used; and a monthly inspection of them to see their working order, and that proper men are working them? and these men should be licensed and numbered in the same way as public stage drivers; and the erecting of steam engines, and steam-boilers, and all alterations should be in the same way as houses, by the Buildings Act, under control. Such a course, I think, would put a stop to many accidents; it would improve the working order of small engines, bring into employ a proper description of men, and make life and property more secure than it is at present.

The dimensions of the boiler.

13 ft. 7 in. long.
5 ,, 2 ,, diameter of the boiler.
2 ,, 0 ,, do. of the tube, at one end.
1 ,, 6 ,, do. at the other.

Man-hole, 16 inches by 11 inches.

The hole in which the valve-pipe was fixed, 1¼ ins. diameter.

Hoxton, May 23rd. ARCHI.

CHEAP GAS.—The two existing gas companies in Liverpool have pledged themselves to reduce the price of gas, on the 1st of January next, to 4s. 6d. per 1,000 cubic feet.

ON THE MARBLES OF IRELAND.

MR. WILKINSON has laid before the Dublin Geological Society some valuable information on the marbles of Ireland, with the view of inducing architects to employ them in their designs rather than resorting at all times to those of Italy. We are glad to assist in circulating it.

Although the use of marble or ornamental stone in internal decoration is as yet very limited, there can be but little doubt that with the advancing improvement of the country, marble will hereafter be more extensively brought into use, and made to contribute both to the ornament and solidity of our edifices much beyond the present practice; and there is no doubt that with greater use much improvement would be made in the mode of working the material. To those who may be of opinion that the labour of converting the material to use may be an impediment to its more general adoption, it may be proper to make a comparison between the labour encountered in completing the almost innumerable sculptures which remain to us of ancient Egypt, worked out of the hardest basalts, granites, porphyritic rocks, and the difficulties encountered by artists in the use of marble rocks, the difficulties bearing about the same relative proportion as the use of marble would to that of plaster. The use of marble at the present day, and for the purposes to which it is most commonly applied, is very different from the practice of a former age. Every one must be familiar with the ordinary mode in which marble is applied in the construction of common chimney-pieces consisting of nothing more than the division of the block into a number of slabs, which, by the aid of plaster of Paris and iron holdfasts, are secured together in imitation of a solid mass. However sufficient this may be for ordinary purposes, it is certainly very inferior to the construction from the solid enduring stone. In all the ancient domestic buildings of the country we find the solid chimney pieces constructed of limestone or dark marbles of the locality, and where undisturbed these are generally still in a sound and perfect state. Old street-buildings in the west of Ireland, and at Kilmallock in particular, present examples of this construction, and possess a very pleasing outline. Instances will very often occur in country mansions or public buildings in the vicinity of which local marbles are attainable, in which such constructions might be imitated with great economy and effect, and where for many architectural purposes it might with much advantage be very extensively applied.

The physical or external character of the marbles constitutes the chief consideration with reference to their use for decoration or ornamental architecture, their colour and internal structure being the most important. Their chemical character has reference more to the facility with which they may be converted into use, and their capability of receiving and retaining a certain polish. In their simplest and purest state, marbles chiefly consist of carbonate of lime, which is of a white colour; the whitest kind, however, is frequently associated with quartz or silex, which more or less deteriorates it. This is more or less united both chemically and mechanically in various ways with nearly all the marbles. The variations in colour arise chiefly from accidental causes, in the greater or less admixture of carbon, or the stains of various metallic oxides, or the sectional outlines of embedded fossils. Magnesia enters largely into the serpentine variety of marble. The more chrystalline and least earthy marbles are the least durable. The compact or finely granular crystalline marbles being superior to those which are largely crystalline or of a shiny texture. Almost all the varieties burn into quick lime; several of them, however, exfoliate in the conversion before they become caustic, and fall into sand when exposed to the ordinary mode of separating the carbonic acid; such qualities are, therefore, very inferior for ordinary cement, as they make a costly and meagre mortar; it is, however, to their use as materials for decoration that the present observations are chiefly intended to relate.

The colours of the marbles of Ireland are almost as numerous as those obtained from Italy. The dark colours vary from jet black to dark dove colour, purple, blue, and grey. The light colours vary from the pure snow-white to the veined, cream-coloured, pink, and light grey. The variegated, consist of the serpentine, black and white-veined, mottled, and those marked with fossil organic remains. The serpentine is here included from its common use for the purposes to which marble is applied, and from its being so commonly called the "green marble," although it is not, strictly speaking, a marble. The black marbles, which are those of most value in Ireland, are extensively met with, and belong to the formation familiarly known as the lower limestone. The merchantable beds of the best quality are met with in the counties of Galway, Limerick, Carlow, and Kilkenny; in the counties of Mayo and Waterford black marble is also met with. At the former places they have been extensively worked.

The best quarries are considered to be those close to the town of Galway, near the bank of Lough Corrib. It occurs there in three beds, varying from about 9 to 12 inches in thickness. One of these is called the London bed, most of the *black marble* raised from it being exported to London; blocks are raised from it of an average size of about 5 to 10 feet in length, and 4 to 5 feet in width; blocks of the size of 20 feet long may be raised. Some in length of 16 feet have been exported, and converted at the Esher-street marble-works in London into a magnificent staircase for the Duke of Hamilton, in Scotland; the wide steps, large landings, and solid carved balustrades being formed of this marble worked to a beautiful jet-black polish; and, doubtless, when brilliantly lighted, and surrounded by various other brilliant accessories appertaining to a palatial residence, will produce an effect of princely grandeur, which to a contemplative mind would originate reflections on its present use, and the countless centuries it has laid dormant in its native beds, where it has been protected by the overlaying limestone from the violent disturbance which its broken and rugged surface exhibits; nor in a less degree would it originate reflection on the rude labours of those who, ignorant of its destiny, have raised it from its native bed, and the numerous hands and skilful artists it has given employment to in its passage to its present destination. The marble beds are covered in the new quarries by about twenty feet of limestone, the raising of which adds much to the expense of obtaining it, although a considerable sale occurs of the limestone for common building purposes. Except near the marble beds the quarrying of it is effected by gunpowder. A considerable quantity of this marble is sawn by water power into slabs, and exported from Galway in that state to England and America. These marble beds most likely embrace a considerable area, and also continue under the water of Lough Corrib, with which they are now nearly on a level. At Oughterard, the western extremity of the limestone formation, and in several other parts of it, similar marble beds are met with and worked; those at Oughterard, in the opinion of the marble-workers in London, contain more or less silica, which renders them less valuable. At Limerick considerable quantities of black marble are raised, and both used in the locality and exported. At Carlow and Kilkenny very fine black marble is raised; at Kilkenny the best beds, which were very thin, have, I am informed, been nearly exhausted. Most of the marble obtained from Kilkenny abounds with shells, and which become more marked and conspicuous as the marble becomes dry and exposed. Chimney-pieces made from the Kilkenny marble are to be met with in most parts of Ireland, and are familiarly known, an extensive use of this marble having at one time prevailed: that which is a jet black, and free from shells, is now more generally esteemed. The polish of black marble is considerably affected by dampness, and is much preserved and improved by being kept dry.

Wherever the black marble beds are met with they are assorted with the limestone beds, and the difference in quality appears almost accidental; some of the over or underlying beds often present a strong contrast in the quality of the stone. In other places there is a gradation in character from the adjoining ordinary limestone to the fine marble. In the impure limestone formation of the calp series, beds of black marble are frequent. They are

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